SLOVENSKI STANDARD
SIST EN 1598:1999

01-december-1999

Varnost in zdravje pri varjenju in sorodnih postopkih - Prosojne zavese, trakovi in zasloni pri obločnih postopkih

Health and safety in welding and allied processes - Transparent welding curtains, strips and screens for arc welding processes

Arbeits- und Gesundheitsschutz beim Schweißen und bei verwandten Verfahren - Durchsichtige Schweißvorhänge, -streifen und -abschirmungen für Lichtbogenschweißprozesse

Hygiene et sécurité en soudage et techniques connexes - Rideaux, lanieres et écrans transparents pour les procédés de soudage a l'arc

Ta slovenski standard je istoveten z: **EN 1598:1997**

ICS:

13.100	Varnost pri delu. Industrijska higiena	Occupational safety. Industrial hygiene
13.340.99	Druga varovalna oprema	Other protective equipment
25.160.01	Varjenje, trdo in mehko spajkanje na splošno	Welding, brazing and soldering in general

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Descriptors: welding, arc welding, operating stations, work safety, accident prevention, screens (protectors), curtains, specifications, transmittance, roasting tests, marking

English version

Health and safety in welding and allied processes - Transparent welding curtains, strips and screens for arc welding processes

Hygiène et sécurité en soudage et techniques connexes - Rideaux, lanières et écrans transparents pour les procédés de soudage à l'arc

Arbeits- und Gesundheitsschutz beim Schweißen und bei verwandten Verfahren - Durchsichtige Schweißvorhänge, -streifen und -abschirmungen für Lichtbogenschweißprozesse

This European Standard was approved by CEN on 26 September 1997.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 1998, and conflicting national standards shall be withdrawn at the latest by April 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies safety requirements for transparent welding curtains, strips and screens to be used for shielding of work places from their surroundings where arc welding processes are used. They are designed to protect people from hazardous radiant emissions from welding arcs and spatter. Welding curtains, strips and screens specified in this standard are not intended to replace welding filters. Appropriate welding filters for intentional viewing of welding arcs from a distance of less than 2 m are specified in EN 169. The present standard is not applicable for welding processes where laser radiation is used.

Darker curtains or screens can be used for mutual separation of adjacent work places for reasons of comfort.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 165,	Personal eye-protection - Vocabulary
EN 167,	Personal eye-protection - Optical test methods
EN 168:1995,	Personal eye-protection - Non-optical test methods
EN 169,	Personal eye-protection - Filters for welding and related techniques - Transmittance requirements and recommended utilisation
ISO/CIE 10526,	CIE standard colorimetric illuminants

3 Definitions

For the purposes of this standard, the following definition applies :

Transparent: Curtains, strips and screens are considered transparent if they admit visibility to the working place. This does not imply that they are glass clear.

For definitions see also EN 165.

4 Requirements

Transparent welding curtains, strips and screens consisting of different materials shall comply with all requirements for each individual material at any part of the device.
For optical test methods see EN 167.

4.1 Transmittance

The luminous transmittance τ_v based on the spectral distribution of illuminant A according to ISO/CIE 10526 shall be greater than 0,000 1 %; scattered light diffused within 1° to the direction of the incident radiation shall be included in the measurement.

The spectral transmittance in the wavelength range between 210 nm and 313 nm shall be less than 0,002 %, in the wavelength range between 313 nm and 400 nm less than 3 %.

In the wavelength range from 400 nm to 1400 nm the hazard level G shall be less than 1.

The hazard level is defined by:

$$G = \frac{1}{1000\ nm} \sum_{\lambda_i = 400\ nm}^{1400\ nm} G(\lambda_i) \cdot \tau(\lambda_i) \cdot \Delta\lambda$$

where
λ_i is the wavelength;
$\tau(\lambda_i)$ is the spectral transmittance of the wavelength λ_i;
$\Delta\lambda$ is the wavelength step for the summation, and
$G(\lambda_i)$ is the spectral risk factor at the wavelength λ_i.

The values of the individual risk factors:

$$g(\lambda_i) = \frac{G(\lambda_i)}{1000}$$

are given for $\Delta\lambda$ = 10 nm in table 1. If a larger step width is used (e.g. 20 nm) the intermediate values can be omitted. For other wavelengths the risk factors may be calculated from the formula

$$g(\lambda_i) = \begin{cases} 2{,}25 - 0{,}00375 \cdot \lambda & for\ \lambda < 600\ nm \\ 0{,}0015 & for\ \lambda \geq 600\ nm \end{cases}$$

In this formula the wavelength, λ_i, has to be inserted in nm.

Table 1: Wavelength dependence of the risk factor

Wavelength, λ_i, in nm	risk factor $g(\lambda_i)$
400	0,7500
410	0,7125
420	0,6750
430	0,6375
440	0,6000
450	0,5625
460	0,5250
470	0,4875
480	0,4500
490	0,4125
500	0,3750
510	0,3375
520	0,3000
530	0,2625
540	0,2250
550	0,1875
560	0,1500
570	0,1125
580	0,0750
590	0,0375
600 to 1400	0,0015

4.2 Reflectance

When measured with un Ulbricht sphere the spectral reflectance between 230 nm and 400 nm shall be less than 10 %. The luminous reflectance shall be less than 10 % (based on the spectral distribution of standard illuminant A).

4.3 UV-Stability

The relative change of the luminous transmittance due to the test in clause 6 of EN 168:1995 shall not be greater than ± 20 %.

4.4 Resistance to ignition

4.4.1 Testing is done at (23 ± 5)° C.

4.4.2 3 samples 190 mm long and 90 mm wide are cut from the curtain, strip or screen. The samples are put in the sample holder (see figure 1). The lower end of the sample shall be 40 mm above the lower end of the sample holder.

4.4.3 A propane burner having a flame height of 20 mm when put in upright position (see figure 2) is used.
The burner has to burn for at least 1 min. Then it is turned by an angle of 45°.

4.4.4 The burner is displaced towards the lower end of the test sample so that the tip of the flame hits the sample in the geometrical centre of its lower end. During the test no draught shall be in the test room.

4.4.5 After 15 s the burner is removed. Carry out visual inspection to see if the flame reaches the test mark 150 mm above the lower end of sample (see figure 1) or whether the sample continues to glow.

4.4.6 The curtain, strip or screen material is considered satisfactory if for all 3 samples the flame does not reach the test mark nor continues to glow after removal of the burner.

5 Marking

In order to be able to identify and use welding curtains, strips and screens as intended, they shall be permanently marked.

The marking shall be clearly visible with letters at least 10 mm high. The marking consists of the number of this standard, the certification mark (where applicable), the manufacturer's, distributor's or importer's name or trade mark, month and year of manufacturing.

6 Information for users

The manufacturer shall provide with each curtain, strip and screen at least the following information:

a) Name and address of the manufacturer, distributor or importer;
b) The number and year of publication of this standard;
c) The model identification;
d) Instructions for storage, use and maintenance, including a note that curtains, strips or screens with defects have to be replaced or repaired;
e) Specific instructions for cleaning:
f) Details of the fields of use, protection capabilities and performance characteristics, especially minimum distance of use;
g) Details of suitable accessories and spare parts and instructions for fitting.